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Name: STEVE COSTA

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Company: CH2M HILL

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- a week in which two production days were sampled would be averaged as 7 days at the average of the two sampled values
- a week in which two production days and one non-production day were sampled would be averaged as 6 days at the average of the two production day samples and one day at the non-production day sampled values
- a week in which two production days and two non-production days were sampled would be averaged as 5 days at the average of the two production day sampled values, one day each for the two non-production day sampled values
- this approach could be extended to weeks with more than two non-production days, if desired

This approach would provide an opportunity to gain experience with non-production day loading characteristics. The requirement for sampling on each non-production day to be used in the average could be relaxed to sampling on representative non-production days in the future, with the approval of EPA (the process for doing this would need to be described in the permit).

Doug indicated that this proposal would have to be discussed with others at the EPA.

(2) Definition of ZID:

Doug went through the range of alternatives that could be used to determine the best approach to protect organisms from acute toxicity in the mixing zone from un-ionized ammonia (and other toxins). During this discussion Doug outlined the four options that are indicated in the EPA Technical Support Document (TSD) for Water Quality-based Toxins Control (pages 71-72) for defining a mixing zone to meet the requirements of criterion maximum concentration (CMC). The four alternatives in the TSD are:

- (1) The CMC is met at the end of the pipe.
- (2) The CMC is met within a short distance from the outfall [high rate diffusers, using a ZID defined as 50 times the discharge length, will usually meet this condition].

distance of 50 times the discharge length scale is a suggestion not a requirement.

Steve indicated that in the particular case of the joint cannery outfall the modeling results indicate that exposure time in a proposed Zone of Initial Dilution (ZID) of 100 times the discharge length scale has been calculated as less than 30 seconds, with a dilution of 80:1. Since the exposure time is well within the "few minute" limit on exposure times, this proposed ZID would comply with the intent of the CMC guidance and therefore an alternative ZID is warranted within the intent of the guidance.

Steve also indicated that alternative 4 also supports an alternative ZID. The alternative requires support by data. Bioassay data is only one type of a number of examples of the kinds of data that could be applicable. Modeling estimations are also given as applicable types of supporting data.

Steve summarized his interpretation of the guidelines in the TSD indicate that an alternative ZID that would easily provide for the ammonia concerns could be determined under either alternative 2 or 4. EPA could require additional supporting data if necessary. However, meeting the CMC within 50 times the discharge length scale or at the end of the pipe was not realistic for the canneries.

Steve explained that the diffuser could be changed so that the discharge length scale test could be met but that the overall performance of the dilution process would not be as good. Such an approach has no overall advantages.

Karen indicated that the tables used for the calculation of un-ionized ammonia were not necessarily accurate for sea water. This caveat is stated in the tables. Ammonia is probably ionized rapidly in sea water.

Doug indicated that the EPA would have to give this perspective careful consideration as they did not want to be in position of having given a permit with standards that can not be substantiated.

Steve indicated that he understood the concerns but that he felt that this would not be the case since the diffuser is designed to provide for meeting the water quality standards at the edge of the zone of mixing. The model was based on no current with the wastefield transport being based on dispersion alone. With the currents the transport will be better than the model indicates. The model is therefore

Steve indicated that flows can be increased up to the capacity of the pipe with additional ports being opened at a later date to improve dilution under flow conditions much higher than present conditions. Steve indicated that he believes that flow restrictions would not necessarily provide additional assurance as long as loading limits are appropriately restricted. Under higher flow conditions, for given loadings, the concentrations would decrease and lower initial dilutions would be required to meet standards at the edge of the mixing zone.

(5) Harbor Monitoring

Doug and Sheila are working on the harbor monitoring portion of the permit. They welcome Steve's input to the harbor monitoring plan and the ocean monitoring study. Steve emphasized that the canneries very much want to be involved in the development of monitoring plans.

Steve suggested that he review the preliminary draft permit in order to help them on this point. Steve said that in terms of additional water quality stations that he and Sheila had talked about the monitoring and had thought that the historical water quality stations should be maintained for comparison purposes but that a few new stations should be added to monitor the edge of the zone of mixing.

In regards to bioassay, Steve indicated that there is a problem in conducting these tests on Pago Pago waters as there are no protocols or established test organisms. There is also expense involved in conducting the tests, especially when required on a regular basis.

Doug indicated that he was considering proposing that a requirement be made for short-term chronic tests to be conducted on a once-per-year basis using the sea urchin species that is used in Hawaii. He felt this would be appropriate as the water to be tested would probably be shipped to Hawaii, where the organisms are available.

Sheila said she wanted to check with biologists in Pago Pago as some have expressed problems with using the Hawaiian sea urchin as a comparison to the biology of Pago Pago Harbor. Sheila expressed that this might be a good opportunity to develop some site specific protocols.

Doug indicated that there is probably not time to develop protocols for this NPDES permit but that he and Sheila could work out some language for a bioassay testing requirement in the permit. Doug indicated that at a minimum there should

Karen expressed concern about basing an absolute maximum limit, well below guidelines and water quality standards on a limited data set that may not include the real maximum to be expected.

Doug indicated that an alternative would be that CH2M HILL conduct an analysis and calculate the distribution of the observed values since high strength waste segregation. The calculation would include the 95th and 99th percentiles of the distribution and a statistical estimate of expected maximum values so that limits to be used would be statistically verified.

Doug indicated that a more stringent limit than the present would be consistent with "anti-backsliding" concepts. Steve indicated that the canneries were not suggesting any relaxation of the standard but rather they were asking that they be left as is.

(9) DO/BOD Monitoring

Steve indicated that the newest generation of the Pago Pago wastefield transport model now has a routine for calculating DO and BOD. A recognized problem with the model is the selection of decay and re-aeration coefficients. He indicated that he can run the model, but that EPA might want to supply the coefficients.

Sheila indicated that the AS Water Quality Standard was that DO could not drop below 70% of saturation or about 5.0 mg/l.

Steve indicated that he had reviewed the historical data and in his judgement there was not going to be a problem with DO or BOD because of the rapid dilution of the effluent in the zone of mixing and the more favorable conditions in the outer harbor. He indicated that he could run the models to verify this point. Doug indicated that DO and BOD were some of his greatest concerns and that he would appreciate it if the model could be used to address his concern.

Steve indicated that there are many variables involved in DO distributions and the model could only indicate trends due to cannery BOD loadings. Many other natural and anthropogenic factors are not included in the model. Selection of the coefficients can significantly affect the model results.